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(54) MANUFACTURE OF SEMICONDUCTOR DEVICE

(57) Abstract:

PURPOSE: To restrain diffusion of impurities in an activation process so as to form a shallow p-n junction by continuously implanting a semiconductor layer with fluorine ions and boron bifluoride ions to be heat-treated later.

CONSTITUTION: An n type silicon substrate 1 is thermal-oxidized to form a silicon dioxide layer 2. Next, boron trifluoride BF_3 is ionized to produce fluorine ions F^- and boron bifluoride ions BF_2^+ ; fluorine ions are extracted for ion-implantation; further boron bifluoride ions are extracted for ion implantation. Next, impurity boron is activated by heat treatment and then a thin p type silicon layer 3 is formed on the substrate 1. Through these procedures, when the boron bifluoride is ion-implanted, the channeling in the low concentration region is restrained so that boron may be led-in shallowly thereby enabling a shallow junction to be formed.

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